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# Achieving Positive Benefits for Chronic Pain: Complementary and Alternative Medicine and Occupational Therapy

Cheryl A. Keffeler  
*University of North Dakota*

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ACHIEVING POSITIVE BENEFITS FOR CHRONIC PAIN:  
COMPLEMENTARY AND ALTERNATIVE MEDICINE AND  
OCCUPATIONAL THERAPY

By

Cheryl A. Keffeler, t-MOTS

Advisor: Sonia Zimmerman, OTR/L

A Scholarly Project

Submitted to the Occupational Therapy Department

Of the

University of North Dakota

In partial fulfillment of the requirements

For the degree of

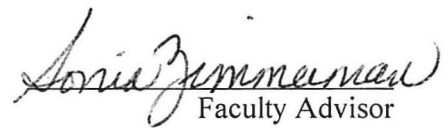
Master's of Occupational Therapy

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This Scholarly Project Paper, submitted by Cheryl A. Keffeler in partial fulfillment of the requirements for the Degree of Master's of Occupational Therapy from the University of North Dakota, has been read by the Faculty Advisor under whom the work has been done and is hereby approved.

  
Faculty Advisor

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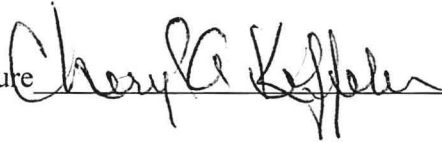
Title: Achieving Positive Benefits for Chronic Pain from Occupational Therapy-Based Alternative Therapies

Department: Occupational Therapy

Degree: Master's of Occupational Therapy

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## ABSTRACT

Complementary and alternative medicine can fit into the occupational therapy practice framework to prepare chronic pain patients for participation in occupational performance. Complementary and alternative medicine (CAM) therapies can be used preparatory to the therapy process or as treatment modalities in their own right.

A comprehensive literature review explores the use and efficacy of complementary and alternative medicine associated with chronic pain diagnoses seen by occupational therapists. Massage, yoga, biofeedback and cognitive-behavioral therapy, Feldenkrais, and Pilates are all techniques that can be utilized by occupational therapists. However, Pilates and Feldenkrais methods are used less frequently by occupational therapists, possibly due to the extensive training required for both. The literature review serves as a foundation for the *Evidence-based Review of Complementary and Alternative Medicine for Occupational Therapy Chronic Pain Intervention*, which will be useful to occupational therapists wishing to incorporate these methods into interventions that will help their clients. The research indicates that CAM therapies have grown over the past decade. Furthermore, research supports the use and efficacy of these therapies. The *Evidence-based Review of Complementary and Alternative Medicine for Occupational Therapy Chronic Pain Intervention* presents the research evidence in a tabular format designed to assist occupational therapists in learning about the selected therapies from an evidence-based perspective. In addition, the product is designed to help them to incorporate efficacious therapies into their practice settings on a wider scale.

## CHAPTER 1

### INTRODUCTION

The use of complementary and alternative medicine (CAM) has risen drastically over the past decade giving consumers a wide array of complementary and alternative medicine therapies from which to choose. Seventy-five percent of adults in the United States report using some form of complementary and alternative medicine. (Barnes, Powell-Griner, McFann & Nahin, 2004). Cherkin, Sherman, Deyo, and Shekelle (2003) report the main reasons for complementary and alternative medicine use are neck and low back pain. However, Rossi, Di Lorenzo, Faroni, Malpezzi, Cesarino, and Nappi (2006) report one of the downfalls of complementary and alternative medicine use is that sixty percent of users are not reporting its use to their medical doctors. The unintentional mixing of conventional and unconventional medicines that results can cause dangerous interactions. Thus, in order to prevent the misuse of healthcare resources and to help doctors best meet their patients' needs, it is important to raise the level of awareness medical doctors have about complementary and alternative medicine (Rossi, et al. 2006). Despite the fact that CAM use is somewhat controversial to conventional medicine, it is a growing trend among consumers and is also used in the practice of occupational therapy.

Complementary and alternative medicine is replete with methods consumers can use, especially those suffering from chronic pain. For purposes of this literature review massage, yoga, Pilates, biofeedback, Feldenkrais, and cognitive-behavioral therapy, are

explored to evaluate their efficacy and determine methods by which they can be incorporated into occupational therapy practice for patients with chronic pain. This scholarly project demonstrates, through an *Evidence-based Review of Complementary and Alternative Medicine for Occupational Therapy Chronic Pain Intervention* how occupational therapists can use CAM as an adjunct intervention choice.

Today, evidence-based rehabilitation is being discussed and is included as part of the intervention process by occupational therapists in order to provide a high quality of service (Law & MacDermid, 2008). Evidence-based therapy is also being evaluated by insurance companies for reimbursement of claims to various rehabilitation facilities. According to Garber (2001), this is because insurance companies want to be sure that the intervention is effective in treating an injury or illness. The interest insurance companies are showing in evidence-based therapy reinforces a systematic review of the information to justify the use of interventions. In order to increase the likelihood of reimbursement for services provided by occupational therapists it is important to incorporate evidence-based practice during intervention.

The Canadian Model of Occupational Performance (CMOP) serves as the basis for the development of this scholarly project's evidence-based reviews for occupational therapists because it is a standardized occupation-centered and client-centered outcome measure. The theoretical basis for the CMOP focuses on the dynamic relationship between the person (cognitive, physical and spiritual), occupation (self care, leisure and productivity) and environment (physical, institutional, cultural and social). The theory suggests that each person is connected to his environment. Results of occupations are a direct interaction with the environment.

Occupational performance and client-centered practice are the two main foci of this model. It is important occupational therapists understand the client's perception of his/her abilities in order to develop client-centered interventions which will assist the client in becoming involved in his/her therapeutic process. The Canadian Model of Occupational Performance (CMOP) is used to detect changes in a client's self-perception of occupational performance over time and can be used for clients with a wide range of disabilities (Baptiste, 2003). The CMOP is an outcome measure used to assist occupational therapists in identifying issues in self-care, productivity and leisure activities. It is important for occupational therapists to understand the client's perception of his/her abilities in order to develop client-centered interventions, which will assist the client in becoming involved in their therapeutic process. The CMOP is an excellent tool for working with clients by allowing them to have choices. Clients establish their own goals, and that places them in control of their own outcomes. Occupational therapists are facilitators in this process and guide clients to self-healing by enabling them to participate in their healthcare.

### Key Terms

- 1.1. Complementary medicine/therapy – unconventional treatment used in addition to conventional medicine; often referred to as integrative or blended medicine (National Center for Complementary and Alternative Medicine (NCCAM, 2007).
- 1.2. Alternative medicine/therapy – treatment used in place of traditional or conventional medicine (NCCAM, 2007).

- 1.3. Yoga – a form of exercise, relaxation and meditation through a series of poses (postures) which can be modified with or without props (Budilovsky & Adamson, 2003).
- 1.4. Feldenkrais – a system of gentle, organized body movements intended to awaken and increase bodily awareness and enhance movement as a whole person (Wildman, 2000).
- 1.5. Cognitive-behavioral therapy – a form of psychotherapy that focuses on patterns of maladaptive thoughts and underlying beliefs. Intervention includes verbal and behavioral methods to bring behavioral changes and improve occupational function (Bruce & Borg, 1993).
- 1.6. Biofeedback – use of a monitoring device to train clients to utilize control of involuntary body responses. Biofeedback raises the patient's conscious awareness of unconscious physiological activities such as muscle tension (Mayo Clinic, 2007).
- 1.7. Massage therapy – manipulation of soft tissue with the use of fingers, fists and hands (Mayo Clinic, 2007).
- 1.8. Evidence-Based Practice (EBP) – practice that is based on research and application of the evidence and finishing with a clinical outcome. EBP provides occupational therapists with the tools to provide a high quality of service with known outcomes for patient populations (Holm, 2000).

Although complementary and alternative medicine use is outside the realm of traditional occupational therapy practice, it is a natural and viable process for occupational therapists to consider incorporating into their plans of care. The holistic

approach that can be achieved through the strategic use of appropriate adjunct treatment modalities to complement a traditional treatment regimen has been shown to positively correlate to increased wellness as well as decreased illness and disability. Additionally, the wide array of complementary and alternative medicine treatment options that occupational therapy professionals can offer to their clients lends itself well to working within the CMOP.

The development of the *Evidence-based Review of Complementary and Alternative Medicine in Occupational Therapy Chronic Pain Intervention* is described in the following chapters. Chapter II presents an extensive literature review of complementary and alternative medicine techniques available to occupational therapists for diagnoses commonly treated in occupational therapy. Chapter III discusses the methodology used during the literature review for development of the evidence-based reviews for occupational therapy. The product, *Evidence-based Review of Complementary and Alternative Medicine for Occupational Therapy Chronic Pain Intervention* is presented in chapter IV. Chapter V presents a summary of the project as well as recommendations, limitations and implications for future research on complementary and alternative medicine.



## CHAPTER II

### REVIEW OF LITERATURE

There is a long history of attempts to understand, treat and control chronic pain. Each year, 80% of all physician visits in the United States are pain-related and more than 50 million Americans suffer from pain-related diagnoses. The cost of treating chronic pain is over \$100 billion per year, including increased health care utilization, reduced productivity, lost wages, and disability benefits (Gatchel, 2005). The current health care system treats acute pain and leaves the burden of proof for chronic pain to its sufferers (Wood, 2004). In *Clinical Essentials of Pain Management*, (Gatchel, 2005) people living with uncontrolled pain are described as having difficulties working, exercising, socializing, having intimate relationships with significant others, and participating in most activities of daily living. Gatchel (2005) clarifies pain, disability and impairment can be separately evaluated, although they are not directly correlated to each other. Gatchel (2005) continues to state there are chronic pain consumers who exhibit with intense pain but show no disability or impairment, while others are reporting little pain, but show increased disability or impairment. The medical community generally accepts that the nervous system is directly related to persistent pain from the initial sensations that serve as a protective measure (acute pain) to the continual nagging aches (chronic pain) that become disabling and destructive over time (Rochman & Kennedy-Spaen, 2007).

Chronic pain itself is debilitating, therefore the sufferer must acquire skills and tools to effectively manage pain symptoms (Chesney & Brorsen, 2000). Patients with chronic pain develop ineffective pain behaviors for managing pain such as not developing positive coping skills, decreasing activities, not pacing themselves thus developing an “all or nothing” attitude (Chesney & Brorsen, 2000). Often the patient with chronic pain will also seek pain relief with over-the-counter medications and/or develop a behavior termed “doctor hopping” to seek prescription pain medications (Qiuling, Langer, Cohen & Cleeland, 2007). Although other healthcare disciplines have programs of complementary and alternative interventions to treat chronic pain and promote health and wellness, programs are limited in occupational therapy.

Because of improved research, healthcare professionals are better equipped with the knowledge to appropriately recommend complementary and alternative medicine to their patients (Mayo Clinic, 2007). This literature review is focused on six types of complementary and alternative medicine for a variety of chronic pain diagnoses, which can be and are treated by occupational therapists. The therapies explored for effectiveness in decreasing pain related disability are massage, yoga, Pilates, biofeedback, Feldenkrais and cognitive-behavioral therapy techniques.

### Complementary and Alternative Medicine

Complementary and alternative medicine (CAM) consists of a group of medical and health care systems, therapies and products that are not presently considered to be a part of conventional medicine (National Centers for Complementary and Alternative Medicine (NCCAM, 2007). Complementary medicine is defined as unconventional treatment(s) and is used in addition to conventional treatments by healthcare

professionals. Treatment that is used in place of traditional or conventional medicine is termed alternative medicine. Complementary and alternative medicine is based on the following principles:

1. Prevention - Good health is promoted by taking the necessary steps in preventative care.
2. Natural healing - The body has its own abilities to heal itself.
3. Active learning - The patient is actively involved with a practitioner working in the field of complementary and alternative medicine who acts as a facilitator of the patient's learning.
4. Holistic care - The focus is on treating the whole person, addressing the physical, emotional, social and spiritual needs of the individual (Mayo Clinic, 2007).

The principles of complementary and alternative medicine most commonly addressed by occupational therapists are active learning and holistic care (Chesney & Brorsen, 2000). Chesney and Brorsen's (2000) discussion of Occupational Therapy's role in managing chronic pain, it is noted that occupational therapists are educated to treat the whole person during the intervention process, taking a biopsychosocial approach rather than treating the symptoms of the disability or illness. Occupational therapists can incorporate complementary and alternative medicine by becoming knowledgeable about the various methods available today so they can in turn apply them during interventions with chronic pain patients.

A number of randomized controlled studies have been completed over the past twenty-five years evaluating complementary and alternative medicine (Cherkin, Sherman, Deyo, & Schekelle, 2003). Cherkin, et al. (2003) report some of the literature

they reviewed was found to be of poor quality having inconsistent conclusions with many of the studies being biased which can lead to confusion in readers. According to Brachtesende (2005) there is a need for future research for complementary and alternative medicine as it has not been thoroughly researched in order to validate CAM use in therapy settings. The efficacy of CAM is controversial (staff writer, 2008) because some of the data is not reliable and valid. According to the article *Complementary & Alternative Medicine in Pain Balance*, staff writer (2008), other research reviews found one type of complementary and alternative medicine may work for one type of pain but not other pain syndromes. Brachtesende (2005) states complementary and alternative medicine is changing on a continual basis as the methods are being studied to demonstrate safety, cost and efficacy. Research is important to demonstrate the effectiveness of complementary and alternative medicine practice and currently research outcomes for any one method are small and show mixed results for efficacy. It is thought seventy-five percent of US adults have used some form of complementary and alternative medicine (including prayer), and sixty-two percent of those surveyed in 2002 had used it in the preceding twelve months (Barnes, Powell-Griner, McFann & Nahin, 2004). The techniques which have been proven to have the best track record for chronic pain management include biofeedback, hypnosis and massage (staff writer, 2008).

The National Center for Complementary and Alternative Medicine (NCCAM, 2007) has identified five categories of complementary and alternative medicine with the following examples from each, including the six complementary and alternative medicine methods that are the subject of this scholarly project (NCCAM, 2007):

Alternative Medical Systems	Homeopathic/naturopathic medicine, traditional Chinese medicine and Ayurveda
Mind-body interventions	Meditation, prayer, yoga and music/dance therapy, cognitive-behavioral therapy, Pilates
Biologically Based Therapies	Herbal products and dietary supplements/vitamins
Manipulative and body-based practices	Massage, chiropractic/spinal manipulation and osteopathic manipulation, Feldenkrais
Energy Therapies	Reiki, Qi gong, therapeutic touch, electromagnetic-based therapies and cranial electrotherapy stimulation, biofeedback

NCCAM identifies complementary and alternative medicine as a group of varied medical and health care systems, practices and products which are not presently regarded as part of conventional medicine. Complementary and alternative medicine covers a wide array of therapies with some being used by occupational therapists more than others.

#### Occupational Therapy and CAMs

Occupational therapists are always looking for the best treatment approaches for each patient, and this is the fundamental reason practitioners use CAM (Brachtesende, 2005). AOTA conducted a survey in 1998 seeking to find which CAM techniques were being utilized by occupational therapists. Those who responded to the survey reported using the following complementary and alternative medicines with their clientele: (Brachtesende, 2005):

1. Guided Imagery
2. Manual Therapies such as massage, Myofascial Release and Craniosacral Therapy
3. Traditional Chinese Movement or Energy Therapies
4. Aromatherapy
5. Reiki
6. Neurolinguistic Programming
7. Meditation
8. Yoga
9. Music and Dance Therapy

In order for occupational therapists to utilize complementary and alternative medicine effectively, they should have the training and knowledge to be competent in using it safely and properly with their clients. Occupational therapists also need to remember to practice in their realm of experience and training in order to prevent harm and to assist the client in becoming well (Brachtesende, 2005). Occupational therapy practitioners need to also be aware of their state regulations and laws pertaining to CAM therapies, which varies by each individual state. Most complementary and alternative medicine is on a cash basis, although it can also be reimbursable by insurance as long as the modality is being used in the scope of practice and has proven clinical efficacy. Complementary and alternative medicine should be used in conjunction with other therapy tools rather than using these modalities alone. When using complementary and alternative medicine along with traditional therapy techniques, the patient's occupational performance and function improves. Complementary and alternative medicine is usually

used as a preparatory modality in preparation for intervention, such as utilizing massage therapy to decrease muscle tightness to prepare the patient for active range of motion.

### Occupational Therapists Use of CAM for Chronic Pain

Occupational therapists can offer a unique approach to the use of complementary and alternative medicine for individuals suffering from chronic pain. By taking a holistic approach, the occupational therapist is in a position to treat the multifaceted aspects of chronic pain (Chesney & Brorsen, 2000).

The six complementary and alternative medicine approaches, massage, yoga, Pilates, biofeedback, Feldenkrais and cognitive-behavioral therapy were explored in the literature for their potential to treat chronic pain conditions. The extent to which the evidence shows that they have efficacy is the extent to which they can be shown to be effective in enhancing the chronic pain sufferer's areas of occupation and, therefore, the extent to which they can be proven to meet the goal of occupational therapy. The goal of occupational therapy is to improve the occupational performance of patients, whether in their homes, work environments, schools, and/or their communities. The patient's involvement during intervention will be enhanced with an end result of improved engagement in meaningful occupation (Youngstrom, et al., 2002).

### Massage Therapy

Field's study (as cited in Tsao, 2007) states massage therapy is described as soft-tissue manipulation by a trained therapist using a hands-on approach for therapeutic purposes. Massage therapy helps to relieve tension in the muscles, promotes relaxation, reduces stress and anxiety and decreases muscle soreness (Mayo Clinic, 2007). Field's study (as cited in Tsao, 2007) states massage therapy has a long history, dating from

second century B. C. China, eventually appearing in Egypt and India. Today massage is administered using mechanical devices as well as utilizing a hands-on application by trained therapists.

As with any type of complementary and alternative medicine, massage therapy has potential risks however the risks are low (NCCAM, 2006). According to the National Center for Complementary and Alternative Medicine (2006) those risks may include low blood sugars for diabetics; too much pressure might cause tissue and nerve damage, internal bleeding, and temporary paralysis, bone fractures due to weakened bones from osteoporosis. Before treatment and to prevent injury it is the responsibility of the client as well as the practitioner to know if the client has burns or open wounds, has had a recent heart attack, has deep vein thrombosis, unhealed fractures or has severe osteoporosis (NCCAM, 2006). Clients need to realize the importance of letting their practitioner know past medical history. Otherwise, what should have been a pleasurable and relaxing experience could become a catastrophic event. It is also the practitioner's responsibility to make sure they have acquired the appropriate knowledge in order to treat the client safely and effectively.

The release of tissue adhesions and pain from soft tissue injuries can be relieved with massage therapy and fits into the performance goals of occupational therapy. Massage promotes tissue flexibility, blood circulation changes, emotional well being and the softening of scar tissue (Chesney & Brorsen, 2000). Holistic Online.com reports some techniques used in massage therapy include effleurage which involves gentle stroking along the length of a muscle; petrissage involves pressure applied across the width of a muscle; deep tissue massage addresses the deep layer of muscles and is done



using finger pressure on knotted or tight muscles (NCCAM, 2006); soft tissue massage is a hands-on technique which does not use deep pressure, friction massage involves deep pressure in circular motions with the thumbs or fingertips; kneading is a method of massage where the width of a muscle is squeezed and hacking involves light slaps or karate chops to the body tissue (Holistic Online.com, 2008). Soft/deep tissue massage and friction massage are techniques used most commonly used by occupational therapists for scar tissue adhesions or inflammation for diagnoses such as lateral epicondylitis or bicep tendonitis (Chesney & Brorsen, 2000). These massage techniques are used on scar tissue after surgery such as with carpal tunnel release (Maser, Clark & Girard, 2001). Depending upon each individual situation and/or diagnosis, any of these techniques can be used as an adjunct intervention for chronic pain patients'.

Plews-Ogan, Owens, Goodman, Wolfe and Schorling (2005) conducted a randomized, controlled pilot study to evaluate mindfulness-based stress reduction (MBSR) and massage therapy for chronic pain. Thirty patients received one hour of massage therapy for eight weeks, while the control group received MSBR education. Massage therapy in this study appeared to be a promising treatment choice for individuals suffering from chronic musculoskeletal pain based upon study participants reporting decreased pain levels, and increased mental health status. However at the one month follow-up the experimental group reported no differences in their pain levels from the beginning of the study which appears the benefit of massage was lost after the massage sessions ended. This study provides weak support for the effects of massage and as a source of long-lasting pain relief due the small sample size and the length of the study.

(Plews-Ogan, et al. 2005). Plews-Ogan, et al. (2005) stress the need for future studies using a larger number of participants in order to have improved reliable results.

Rossi, et al. (2006) interviewed one hundred and ten patients with chronic tension-type headaches to gather information on complementary and alternative medicine use. Structured interviews, administered by physicians, were designed to gather information regarding the use of complementary and alternative medicine. It was discovered massage was used only eighteen percent of the time to treat the participants in this study. Approximately thirty-eight percent of the participants in the study who reported utilizing massage reported positive effectiveness in decreasing headache pain. Participants in the Rossi, et al. (2006) study indicated that a friend or a relative most commonly recommended complementary and alternative medicine to them, and sixty percent of the study participants indicated that they did not report complementary and alternative medicine use to their physicians. This study does not address the reason why patients were not reporting CAM use to their physicians or healthcare providers.

Cherkin, Sherman, Deyo, and Schekelle (2003) conducted a literature review of randomized, controlled trials (RCTs) published after 1995 in order to explore the effectiveness, safety and cost of massage, spinal manipulation and acupuncture. They found massage therapy to be the least costly treatment while providing the best pain relief out of the three treatment agents being studied. They also find that massage reduces the cost of care after an initial course of therapy. However, spinal manipulation provided few clinical benefits to the patient, offering no advantage over commonly used treatments. Acupuncture's effectiveness remains unclear in the treatment of chronic pain

relief. However, all three treatments are found to be safe when administered by a professional trained in the modality being used.

Tsao and Zeltzer (2005) conducted a literature review of evidence for the effectiveness of complementary and alternative medicine used in children with pain. Their review describes a randomized, controlled trial in Field's study (as cited in Tsao, 2007), with twenty-two children (ages 5-14) suffering from juvenile rheumatoid arthritis to determine the effectiveness of massage for children suffering from pain. The children received either a 15 minute massage or 15 minute relaxation session on a daily basis from their parents. Each child reported their own self-assessment of the pain while the parents reported their observations and perceptions of their child's pain. After 30 days, Field's study (as cited in Tsao, 2007) found children experienced significant pain relief and were able to demonstrate the efficacy of massage therapy in pediatrics. Massage therapy studies continue to show positive promises of pain relief not only for adults, but children as well.

Tsao (2007) conducted a literature review with an emphasis on randomized, controlled studies where massage therapy was used as the only treatment versus being used in conjunction with other interventions. One of the studies reviewed was a randomized, controlled trial where thirty-three women suffering from fibromyalgia were divided into three groups in which one group received massage, another received transcutaneous electrical stimulation, and the third group received a placebo treatment Sunshine, et al's study (as cited in Tsao, 2007). After five weeks of treatment, the massage group reported decreased anxiety, depression, decreased tender points, decreased stiffness and fatigue, and pain during the trial period. The group who received

the TENS intervention reported the same benefits, however not until the last day of the trial.

Walach, Guthlin, and Konig (2003) designed a pragmatic randomized, controlled study in which they compared massage with standard medical care for chronic pain. Twenty-nine participants were randomized into two groups, 19 receiving massage while ten received standard medical care for chronic pain. Standard medical care could range from prescribing medications to giving advice for posture. Physical and occupational therapy were excluded during the trial. Although, standard medical care often included pharmacologic intervention, the participant's pain was of a non-inflammatory and non-rheumatic diagnosis. Pain was rated pre- and post – treatment and three months after the completion of the study. Walach, Guthlin, and Konig (2003) noted the massage group reported decreased pain at the three month follow-up. However, neither group reported significant differences in pain at pre- and post- intervention. Walach, Guthlin, and Konig (2003) also report at the time of the study that doctors in Germany were hostile regarding massage treatments to the extent that reimbursement was limited. They also report that during the study other healthcare professionals were campaigning against massage therapy. This attributed to the small study size (Walach, Guthlin, & Konig, 2003). Also, they had participants drop out of the study who were randomly placed in the standard medical care group secondary to wanting to participate in the massage group.

Pesco, Chosa, and Tajima (2006) compared hands-on therapy with active exercises (experimental group) and education with active exercises (control group). A randomized study of twenty-four women divided into one of two groups, control and experimental, who had complaints of stiffness associated with neck and shoulder pain.

The education group (control) participated in exercises and received education for posture and taking frequent rest breaks. The control group received 15 minute neck and shoulder massages starting with a soft touch and gradually increasing to deep friction massage followed with instructions for active stretching exercises using correct body form. Both groups demonstrated significant changes in neck and shoulder pain as well as stiffness at the end of the study.

This literature review finds no study opposing the benefits of massage therapy. The literature reviews indicate efficacy for pain relief which was reported by both participants and authors of the various studies reviewed. Study participants experienced and reported decreased stress, anxiety and depression, which are some of the components of chronic pain (Tsao, 2007). Tsao (2007) also states massage therapy is not meant to be used as a separate intervention technique, but rather as an adjunct to other treatment modalities such as for strengthening exercises, increasing range of motion or flexibility. Massage therapy can be used as a preparation tool for participation in an exercise program to assist in decreasing tissue tightness or as a modality to be used after an exercise program to promote occupational performance. The studies need to increase the sample population and advance to level I evidence-based research.

### Yoga

Yoga is a form of exercise that uses postures (asanas) and breathing (pranayama) through a sequence which promotes increased flexibility and strength (Budilovsky & Adamson, 2003). Wood (2004) reports yoga is one of the oldest pathways to holistic health and wellness, yet there are few healthcare practitioners who are familiar with yoga

and thus are not familiar with its benefits, especially for the benefits a chronic pain patient could receive.

Wood (2004) explores the benefits of participating in a yoga program during an eighteen month single case study with a woman suffering from fibromyalgia, neck and back pain and arthritis. The participant started out with Iyengar-based yoga 1-2 times per week for sixty minutes each session. An evaluation was started by Wood (2004) with continuing evaluations prior to each session the client was seen. Specific asanas (poses), pranayama (breathing) and any other techniques used during the intervention were documented. Outcome measures included pre- and post- intervention data along with data collection during intervention as well as taking information for height, body weight, and cholesterol, pain reports from every affected area, medications and dosage, triglyceride levels, blood pressure, bone density reports, and glucose levels. It was established progress was directly proportional to involvement in yoga per information collected by Wood (2004). The participant reported increased quality of life at the end of the eighteen month case study.

John, Sharma, Sharma, and Kankane (2007) completed a randomized, controlled study to evaluate the effectiveness of yoga for migraine headaches. Seventy-two patients exhibiting with migraine headaches without aura were randomly divided into a yoga therapy group and a self-care group for three months (John, Sharma, Sharma, & Kankane, 2007). The yoga group participated in yoga instruction five days per week for sixty minutes, whereas the self care group was contacted one time per month for three months to receive information for migraines, medications, triggering factors, and were given handouts for lifestyle modifications such as diet and sleep. The outcome measures

for the study included pain intensity using a numeric scale (0-10), headache frequency diary, and the McGill pain questionnaire. John, Sharma, Sharma, and Kankane (2007) found there were significant differences with the yoga group with decreased pain intensity, headache frequency, improved emotional status of headaches and decreased medication use. This study was able to demonstrate the benefits of participating in yoga instruction to decrease pain and increase emotional and well being status.

The literature reviews demonstrate with positive efficacy for participation in yoga, not only for chronic pain, but also for improved quality of life. John, Sharma, Sharma, and Kankane (2007) report there is a need for further research in the area of yoga and decreased pain to determine the long term effects. In this literature search there were no derogatory literature reviews found. It is possible participation in yoga may lead to increased satisfaction in one's daily occupations, however, there needs to be further research in this area due to the studies found not being representative of the efficacy of yoga due to one study being a single-subject case study, and the other being a study with a small sample size.

### Pilates

According to Siler (2000) Pilates is a scheme of stretching and strengthening which was developed by Joseph H. Pilates over ninety years ago. It tones and strengthens muscles while improving posture and flexibility (Siler, 2000). Physical fitness, decreased stress and fatigue, and engagement of the mind-body connection are some of the philosophies behind Pilates (Siler, 2000).

Although very little research on Pilates has been conducted, what has been done demonstrates Pilates enhances and maintains physical fitness. According to the Mayo

Clinic (2007) research shows regular practice of Pilates increases one's core strength. Preliminary research suggests Pilates can help reduce weight when practiced regularly, in addition to decreasing low back pain.

Research demonstrates that Pilates decreases pain in patients with low back pain (Gladwell, Head, Hagggar & Beneke, 2006). Forty-nine individuals suffering from non-specific low back pain were randomly placed in a Pilate's group and a control group. The Pilates group received Pilate's intervention for six weeks. The Pilates group showed improvement at the end of the study with improved general health and proprioception, increased flexibility, and decreased pain. The control group in this study did not show any improvement. The data from this study demonstrate that participation in Pilates with a base of specific core stability/strengthening exercises can help to decrease non-specific low back pain. In addition, it showed Pilates can also help in improving overall general health, decreasing pain levels, increasing flexibility and proprioception, and increasing sports performance (Gladwell, Head, Hagggar & Beneke, 2006).

Donzelli, Di Domenica, Cova, Galletti and Giunta (2006) evaluated the efficacy of a Pilates method called CovaTech Method in forty-three patients suffering from low back pain. The CovaTech Method is a modified technique derived from the original Pilates. The participants were evaluated at the beginning of the program and then post-intervention at one, three and six months. The Oswestry Low Back Pain Disability Questionnaire (OLBPDQ) was used to evaluate disability from the pain; and the visual analog scale (VAS) was also used to evaluate pain levels. During the first session, patient information was collected, including occupation, daily working hours, prevailing body position at work, whether or not heavy objects were lifted at work or at home, how



the patient traveled to and from work and the duration of the journey, with a view to revealing occupational factors. Twenty-one low back pain patients participated in ten consecutive sessions of the CovaTech Method and twenty-two patients participated in a protocol based on the classical back school principles. Each session was one hour in length with up to seven participants in each group at any one time. While Donzelli, et al. (2006) found both groups to be satisfied with the results, the Pilates group was very satisfied at the end of the study. Donzelli, et al. (2006) found that Pilates could be as effective as back school protocol both in short term as well as long term outcomes. Additionally, the CovaTech Method was felt to be a valid alternative in the treatment of low back pain (Donzelli et al. 2006). This study provided evidence that Pilates can be as effective as back school protocol both in short term as well as long term outcomes.

Even though the two literature reviews demonstrate that participation in a Pilates program decreases pain while increasing flexibility and strength, there is a need for further research in the area of Pilates to determine the long term effects of participation in this form of exercise for chronic pain.

### Biofeedback

Biofeedback is a method that educates clients how to consciously regulate unconscious bodily functions such as breathing and heart rate, blood pressure, relax muscles, relaxation, etc. (Barnes, 2004). Biofeedback is an option available to occupational therapists for the treatment of chronic pain. It can be used in conjunction with education for progressive relaxation or diaphragmatic breathing exercises (Chesney & Brorsen, 2000). According to Chesney and Brorsen (2000) biofeedback and relaxation training positively influences perceptions of decreased pain in the long term.

Rochman and Kennedy-Spaen (2007) report when an injury occurs, muscles around the injury area become restricted and taut, this is the body's protective response to prevent further injury. Patients then develop "muscle guarding" which becomes another protective response to the body part injured. Often times guarding behaviors occur with acute pain such as after a surgery because of weakness and also to protect the surgery site. However once chronic pain begins, the guarding behavior is automatic and the human body is used to operating in this fashion and will consider this to be natural posturing. Chronic pain patients must learn how to reverse this guarding response as this compensatory pattern has a negative effect on other body parts (Rochman & Kennedy-Spaen 2007). According to Rochman and Kennedy-Spaen (2007) the patient can learn how to facilitate muscle relaxation through the use of biofeedback. This can be achieved by an occupational therapist who has received the proper training and credentialing.

Thirty patients diagnosed with fibromyalgia syndrome (FMS) who were already attending an outpatient clinic and met the criteria required by the American College of Rheumatology (ACR), were chosen for a randomized study by Babu, Mathew, Danda and Prakash (2007). The participants were randomly divided into an experimental group (biofeedback treatment) and a control group receiving a placebo. The visual analog scale (VAS), Fibromyalgia Impact Questionnaire (FIQ), six minute walk test (SMWT) and the number of tender points were evaluated prior to and after six days of consecutive treatments, with the experimental group receiving true biofeedback and the control group receiving placebo biofeedback. Both groups participated for six consecutive days of continuous biofeedback treatments with each session lasting forty-five minutes. Babu, Mathew, Danda and Prakash (2007) determined a significant decrease in pain and tender

points, however the study did not show changes in FIQ and SMWT scores. The VAS scores differed between the two groups, with the control group scoring 8.13 prior to study and 5.0 after the study. The experimental group scored 7.5 before the study and 3.0 after the study. Babu, Mathew, Danda and Prakash (2007), conclude when biofeedback is used as a treatment modality, it decreases pain in patients with FMS and also affects improvements in FIQ, SMWT and the number of tender points.

Barnes, Powell-Griner, McFann & Nahin, (2004) find biofeedback is used most commonly as a CAM modality within the context of mind-body therapies. The study consisted of data collection from the 2002 National Health Interview Survey (NHIS) from 31, 044 adults over the age of 18 who reported using complementary and alternative medicine. It was found 62% from the sample size were using complementary and alternative medicine, with prayer being used by 43%. The surveys collected from the NHIS were dependent upon the respondents' knowledge and their willingness to report CAM use accurately.

According to NCCAM (2007), the mind-body medicine category focuses on the interactions among the mind, body and behavior. It also considers the powerful ways in which emotional, mental, social and behavioral factors can directly affect health. Practices that promote relaxation such as hypnosis, biofeedback and cognitive-behavioral therapy all fall within the purview of mind-body medicine (NCCAM, 2007). Barnes, Powell-Griner, McFann and Nahin, (2004) find that biofeedback is used most commonly as a complementary and alternative modality within the context of mind-body therapies.

According to Gatchel (2005) often patients will seek medical assistance to shift the responsibility of coping with their problem from themselves to others, such as

healthcare professionals. Then they can more easily place the blame for not getting better onto another. According to Jennifer Bottomley (1997) in the book *Complementary Therapies in Rehabilitation*, biofeedback produces positive responses for functional outcomes as well as for chronic and acute conditions. When patients are receiving biofeedback, they are also being trained in one of many techniques such as guided imagery, progressive muscle relaxation, deep breathing, etc. Occupational therapists can use biofeedback to assist chronic pain patients in reaching functional goals by teaching them how to relax the muscles that are causing increased pain that prevents them from doing simple tasks such as putting on socks and shoes.

According to the Mayo Clinic (2007) studies indicate the potential for improvement of symptoms such as asthma, Raynaud's disease, nausea and vomiting from chemotherapy, headaches, anxiety and stress through the use of biofeedback techniques. However, they state research is continuing in order to establish the efficacy of biofeedback.

#### Feldenkrais

Dane (2007) states the Feldenkrais Method is a type of somatic training which centers on the nervous system and how individuals move their bodies. Feldenkrais techniques are described as an owner's manual for the body, according to the North American Feldenkrais Guild (Dane, 2007). In other words, those who take Feldenkrais lessons can learn how to use their bodies with increased efficiency (Dane, 2007). By being able to utilize increased efficiency, the individual can be free of chronic pain, expand their active range of motion, and improve physical performance as needed for functional tasks such as activities of daily living (Dane, 2007).

The central nervous system has a predictable response when a patient is suffering from pain (Gatchel, 2005). Changes occur in breathing or in the use of the muscles, motion or function. Also the longer the pain is present, the more likely it is for alterations to occur in the body. This establishes habits, which usually show as dysfunctional motion or posturing (Wildman, 2000). Wildman (2000) reports the Feldenkrais Method helps patients learn about and adapt to living with a disability such as pain through improved body awareness.

Moshe Feldenkrais, a physicist, developed the Feldenkrais method while suffering from knee pain. He observed during his own experience with knee pain how humans adapt and also they have choices about the ways they move. Feldenkrais discovered through his own injury that a person can learn how to work with habits of movement. In addition to that, he discovered that alterations can be made in habitual strategies. Feldenkrais also noticed that his knee pain was causing secondary changes in loading and in movement patterns. He developed the Feldenkrais method by exploring techniques for how a person with a disability can learn how to adapt and change in order to promote the most effective way to live life with a disability (Wyatt-Jackson, 1997).

Stephens, DuShuttle, Hatcher, Shmunes, and Slaninka (2001) did a study in which twelve people with multiple sclerosis (MS) were randomly assigned to an experimental group, Awareness Through Movement (ATM), for eight weeks at a for two to four hours each. The control group participated in educational classes over ten weeks. The study was designed to learn if improvements can be made using the Feldenkrais Method for balance, balance confidence, and self efficacy. The six outcome measures used in this study included the Basic Balance Master modified Clinical Test of Sensory Interaction in

Balance (mCTSIB), Limits of Stability tests, the Activities-specific Balance Confidence Scale, the Equiscale, and the Multiple Sclerosis Self-Efficacy Scale. Results showed the experimental group to have significant improvement in mCTSIB scores, as well as improved balance confidence compared to the control group. The experimental group showed improvements over the control group in other measures. Stephens et al. (2001) suggest this type of motor learning intervention (ATM) can be an effective tool for improving a variety of physical and psychological limitations as related to balance and postural control.

Bearman and Shafarman, (2004) did a pilot study looking at the efficacy and cost of using Feldenkrais intervention for Medicaid recipients with chronic pain. Patients who had chronic headaches and/or musculoskeletal problems were enrolled in the program. They started with seven patients who participated in 2-weeks of intensive instruction, 4-5 hours each day for 4 days each week. The second phase of this study consisted of six more weeks with one meeting per week starting at 4 hours with the duration of the meetings decreasing to one hour at the last week. Bearman and Shafarman (2004) were able to show increased patient mobility, decreased pain perception, and decreased total health care costs including pharmacological at the end of the study. The American Academy of Pain Management's National Pain Data Bank (NPDB) test instrument was administered pre- and post – intervention and at one year after completion. The studies in this literature review demonstrate the need for future studies with a larger sample size to validate the efficacy of the Feldenkrais Method for chronic pain patients as well as others with mobility issues.

There is little research studying the efficacy of Feldenkrais, which is a method having relevance for patients demonstrating with balance disorders as well as mobility dysfunction. There is much need for future studies on Feldenkrais as a type of complementary and alternative medicine to determine if it is effective for a variety of patient populations, such as chronic pain.

### Cognitive-Behavioral Therapy

Chesney and Brorsen (2000) report cognitive-behavioral therapy (CBT) educates patients about how thought patterns contribute to the pain experience, the goal being to extinguish negative thought patterns about oneself, the world and the future. It can be used by occupational therapists in treatment sessions to alter negative thoughts through a variety of interventions such as cognitive restructuring, goal setting for behavioral changes, and changing irrational thoughts. There are many methods from which to choose which can be used in conjunction with CBT such as relaxation techniques, biofeedback, time management and assertiveness training (Chesney & Brorsen, 2000). Cognitive-behavioral therapy gives chronic pain patients the skills and tools necessary to manage pain-related dysfunction such as negative thoughts, feelings, and behaviors. Cognitive-behavioral therapy is about learning and using effective coping and behavioral skills to manage pain (Rochman & Kennedy-Spaen, 2007). During treatment sessions, patients also participate in activities of daily living, work-related tasks, and exercise programs in order to learn how to develop further pain management skills that are effective. This facilitates the chronic pain patient in acquiring the ability to be successful in their activities of daily life. According to NCCAM (2007), cognitive-behavioral

therapy is considered a mind-body medicine because it was developed to enhance the mind's ability to affect bodily functions.

Cognitive-behavioral therapy is a representation of the work of many cognitive-behavioral theorists, however the most prominent are Albert Ellis, Aaron Beck and Albert Bandura (Bruce & Borg, 1993). With the union of Ellis's rational emotive therapy (RET), Beck's cognitive therapy and Bandura's Social Learning Theory, the role of cognitive processes in understanding behavior, developing self-control, developing evaluations and treatment strategies advanced the effectiveness of behavioral intervention treatment approaches (Bruce & Borg, 1993).

Mind-body therapies are helpful for pain control as well as relaxation and can easily be incorporated into the emergency room as a protocol at the bedside or during diagnostic procedures (Dillard & Knapp, 2005). During a systematic review of literature Jacobs (2001) study (as cited in Dillard & Knapp 2005), indicates mind-body interventions can be an effective tool for health conditions that are caused or made worse by stress. Pain is stressful and it is also the number one reason patients seek medical attention in emergency rooms across the nation (Gatchel, 2005). These mind-body therapies are advisable options to be considered for patients seeking emergency medical attention whether it is for pain or an injury (Dillard & Knapp, 2005).

There are no cures for chronic pain, therefore cognitive-behavioral therapy focuses on reducing the dysfunction that become part of a person's life because of the pain rather than the focus being on reducing or eliminating the pain itself (McCracken, Vowles & Eccleston, 2005). This presumes, of course, that no plausible remedy exists



for the pain itself, so the goal is to help the patient learn to function optimally despite the pain.

A study by McCracken, Vowles and Eccleston (2005), provides evidence of the benefits of participating in an acceptance-based therapy program for chronic pain. One hundred and one participants were included in the study to determine the efficacy of participating in a cognitive-behavioral therapy program with a focus of decreasing the upsetting and disabling influences of pain. Requirements for participation in the study: pain present for over three months, disability caused by the pain, not a candidate for further diagnostic procedures, and no reported psychological disorders. Standardized tests included the Beck Depression Inventory (BDI) to measure depression and emotional distress, the Pain Anxiety Symptoms Scale (PASS) to measure pain-related anxiety and avoidance, and the Sickness Impact Profile (SIP) to measure physical and psychosocial disability. The standardized tests were given to the participants at the initial evaluation, pre- and post- intervention, and at three months following the study. The duration of the intervention was six hours per day for five days per week, which included an exercise program, looking at health habits, choosing meaningful directions with their lives, and looking at the psychological aspects of pain. Immediately after the study, standardized test scores verified significant decreases in pain-related symptoms. The scores indicated continued decreases three months after intervention. There was also a decrease in the use of analgesics among the study participants (McCracken, Vowles & Eccleston, 2005). Patients who are suffering from pain often report irrational beliefs to healthcare providers regarding their functional status (Eccleston, 2001). Patients will form beliefs from information they receive from the healthcare professionals involved in their care plan.

An article titled “Role of psychology in pain management” by Eccleston (2001) page 144, quotes a patient who was overheard reporting to healthcare professional the following statement: “Someone told me my spine was crumbling, so obviously, I have to be careful not to bend in case I make it worse or it snaps.” This patient developed the irrational thought that his spine would break if he bent over. The end product for this particular patient is the psychosocial consequence of his pain-related irrational thoughts which will eventually become a pain associated disability.

Occupational therapists treating the patient with chronic pain, needs to be aware and have an understanding of the psychological factors resulting from the pain experience. Some specific psychological factors which affect the pain experience in a negative fashion include fear (attention and vigilance, catastrophizing and worry, avoidance), depression (anger, self-denigration), and making irrational sense of the pain (Eccleston, 2001). Eccleston (2001) states psychological factors are the core of the pain experience for chronic pain sufferers; cognitive-behavioral therapy should be the innermost component of any pain management program.

Nash, Park, Walker, Gordon and Nicholson (2004) did a piloted study to evaluate the effectiveness of a cognitive-behavioral therapy program for decreasing headaches, reducing medications and improving quality of life and also to see if providing the program in a group format would intensify the results. The study consisted of sixty-two participants suffering from headaches as their main complaint. Each participant went through a pre-evaluation, completed 10 sessions of a cognitive-behavioral therapy, and had a post-intervention evaluation one month later. Nash, Park, Walker, Gordon and Nicholson (2004) reported a group format provided improved success with the

participants reporting decreased headaches, reduced medication use and improved quality of life. This study provides efficacy that cognitive-behavioral therapy can improve the disabling effects of chronic pain. It also reinforced the benefits of providing a group format for further improved success. A group format gives the cognitive-behavioral therapy patient a support group of individuals who are going through similar pain.

### Summary

Occupational therapists can use complementary and alternative medicine as part of their treatment modalities for chronic pain patients with beneficial results. Although it is used by many other professionals as well, such as nurses, physical therapists, and psychologists, CAM is compatible with the *Occupational Therapy Practice Framework* (Youngstrom, 2002) and, therefore, should be incorporated into intervention. It should be considered when completing the plan of care for the patient with chronic pain after an evaluation. In order for occupational therapists to gain expertise in the complementary and alternative medicine field, they need to become experts in the technique(s) they are attempting to use with a patient, including the risks when used inappropriately.

Complementary and alternative medicine is an excellent modality to include in the intervention process, and there are studies in the literature showing efficacy. However, there is much room for improvement both in terms of the amount of research (number of studies focusing on CAM) as well as in the quality, or level, of the evidence being produced. In order to develop good quality level I evidence, the studies should include larger sample sizes and be randomized-controlled trials rather than single case studies or articles with an expert reporting results they have observed with a particular technique. In addition, research should be conducted specifically to determine the effect

of the various complementary and alternative medicine approaches available for patients suffering from chronic pain being treated in occupational therapy settings.

In the following chapters, practice guidelines for occupational therapy are put forward in order to educate occupational therapists regarding the evidence, efficacy and benefits and risks of utilizing complementary and alternative medicine. Also addressed in chapter IV is a discussion on how complementary and alternative medicine can fit into the scope of occupational therapy. Finally, information is provided to occupational therapists on how to become certified or trained in the use of complementary and alternative medicine. Chapter III will address the methodology used during the literature review. The product, *Evidence-based Review of Complementary and Alternative Medicine for Occupational Therapy Chronic Pain Intervention*, is presented in chapter IV. Chapter V presents a summary of the project as well as recommendations, limitations, and implications for future research in the field of CAM.

### CHAPTER III

#### METHODOLOGY

Occupational therapists make choices about what therapies to include in the intervention process. Their choices should be informed by the most reliable evidence available demonstrating the efficacy for any given therapeutic method. This evidence comes in the form of scientifically designed studies, or clinical trials. This scholarly project examines the evidence supporting the efficacy of complementary and alternative medicine (CAM) use within occupational therapy, specifically, the following therapies: massage therapy, yoga, Pilates, biofeedback, Feldenkrais, and cognitive-behavioral therapy.

Databases used in the search for evidence on complementary and alternative medicine include PubMed, CINAHL, MEDLINEplus, Dynamed and PsychiatryOnline. In addition to the aforementioned databases, the Internet was used to access organizational websites such as the American Occupational Therapy Association (AOTA), Mayo Clinic and the National Center for Complementary and Alternative Medicine (NCCAM). AOTA's position paper on Complementary and Alternative Medicine was useful in helping to define an occupational therapist's role in the delivery of complementary and alternative medicine to their patients.

This scholarly project provides occupational therapists with an evidence-based review for the use of complementary and alternative medicine, which is designed to be a resource for occupational therapists wishing to incorporate CAM into the intervention

process. The six complementary and alternative medicine approaches chosen for this scholarly project were chosen because they are the ones that would more commonly be used by occupational therapists during the intervention process for chronic pain patients. Throughout this literature review, massage, yoga and cognitive-behavioral therapy appeared more often in the literature while research focusing on biofeedback, Feldenkrais and Pilates was much more limited. The limited amount of research available begs the question as to the advisability of using the CAM therapies that are the subject of this scholarly project within the scope of occupational therapy practice. That issue is addressed in the following chapter.

Information about each of the six CAM therapies is presented in addition to an evidence-based review of the CAM therapies studied. Evidence-based tables are included as a visual representative of the research reviewed, level of evidence presented, and a summary of results. The intention is to aid the occupational therapist in making sound decisions about the validity of certain CAM approaches and whether they should be included in the intervention process. The complementary and alternative medicine approaches examined in this scholarly project were reviewed in depth and the findings were then used to develop a resource for occupational therapists wanting to incorporate complementary and alternative medicine into interventions for patients with chronic pain. The *Evidence-based Review of Complementary and Alternative Medicine for Occupational Therapy Chronic Pain Intervention* is presented in Chapter IV.

## CHAPTER IV

### PRODUCT

*The Evidence-based Review of Complementary and Alternative Medicine for Occupational Therapy Chronic Pain Intervention* is designed to assist occupational therapists who wish to incorporate complementary and alternative medicine (CAM) into their practice and to provide a reliable standard for doing so effectively. The information in this product was developed utilizing a literature review of selected topics of, which indicates how fast the complementary and alternative medicine trend is growing in healthcare. The intent of the evidence-based review is to inform occupational therapists regarding the different types of complementary and alternative medicine available for use in treatment of persons with chronic pain. The review of literature is presented in an easily-read format on CAM therapies and was chosen as the focus for this scholarly project and is presented as part of this product in a tabular organizational format in order to summarize the current evidence on these therapies in a concise, user-friendly manner. Evidence tables provide a visual representation of research literature pertaining to each of the selected topics.

The evidence-based review includes definitions and key terms used in complementary and alternative medicine reflecting the position of the American Occupational Therapy Association on the use of CAM. Six types of complementary and alternative medicine techniques were investigated, including massage, yoga, Pilates, biofeedback, Feldenkrais and cognitive-behavioral therapy. The evidence-based review

was developed specifically for occupational therapists to utilize in their practices to address the needs of patients with chronic pain conditions. It is the intent of this author for occupational therapists to utilize this product as a resource to heighten their awareness of and help them become adequately educated on complementary and alternative medicine methods. In addition, the intent of the author is to see the occupational therapy community increase the proper use of its use of complementary and alternative medicine.

It is recommended that each therapist practice complementary and alternative medicine only within the scope of adequate training, knowledge and experience during the therapeutic process. The *Evidence-based Review of Complementary and Alternative Medicine for Occupational Therapy Chronic Pain Intervention* is not intended to provide practice expertise. It is designed to promote awareness of complementary and alternative medicine therapies available as well as delineate how those can be used to facilitate occupational performance. It is a starting point rather than a destination; and occupational therapists interested in using complementary and alternative medicine are encouraged to seek appropriate training before implementing these therapies into their treatment plans and interventions.

Finally, clinical research on the use and efficacy of complementary and alternative medicine therapies is anything but prolific, perhaps since CAM therapies are not commonly practiced in traditional occupational therapy. Therefore, the volume of research is weighed against the quality of the evidence presented for each therapy to determine whether it is sufficiently compelling to recommend each of the six therapies.



Evidence-based Review of  
Complementary and Alternative  
Medicine  
for  
Occupational Therapy  
Chronic Pain Intervention

Cheryl A. Keffeler, T-MOTS

Advisor: Sonia Zimmerman, MA, OTR/L, FAOTA

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### **Complementary and Alternative Medicine (CAM):**

Complementary and alternative medicine (CAM) consists of a group of various medical and health care systems, therapies and products that are not presently considered to be a part of conventional medicine (NCCAM, 2007). Complementary medicine is defined as unconventional treatment(s) and is used in addition to conventional treatments by healthcare professionals. Treatments which are used in place of traditional or conventional medicine are termed alternative medicine.

### **Chronic Pain:**

There is a long history of attempts to understand, treat and control chronic pain. Each year, 80% of all physician visits in the United States are pain-related with more than 50 million Americans suffering from pain-related diagnoses. The cost of treating chronic pain is over \$100 billion per year, including increased health care utilization, reduced productivity, lost wages, and disability benefits (Gatchel, 2005). Acute pain patients can usually find significant pain relief from their primary healthcare professionals (Thorn,

2004), however currently the healthcare system leaves the burden of proof for chronic pain to its sufferers (Wood, 2004). In *Clinical Essentials of Pain Management*, Gatchel (2005) states that people living with uncontrolled pain have difficulties working, exercising, socializing, having intimate relationships with significant others, and participating in most activities of daily living. Often these patients travel unsuccessfully from doctor to doctor, laboratory test to laboratory test, medical imaging center to medical imaging center in a continuing mission to find a diagnosis for the unrelenting pain (Thorn 2004). Thorn (2004) also states the biomedical analysis of chronic pain considers the pain to be a symptom of an underlying physical pathology.

Acute pain is often classified as pain associated with inflammation, tissue damage, or a disease process (Turk & Melzack, 2001). Pain that has been present for a long period of time (years or even decades) and has, therefore, not been resolved within a reasonable amount of time is called chronic pain (Turk & Melzack, 2001).

Turk et al. (2001) point to changes over the years that place

increased attention on evidence and clinical effectiveness of an intervention. At this time healthcare professionals have no valid way of evaluating patients who are experiencing pain (Turk et al. 2001). Pain is subjective and the tools to objectively and reliably evaluate pain intensity and dysfunction are not available. Turk et al. (2001) also report that what is known about chronic pain today is from studies on patients often referred to pain clinics. However, the patients in these studies and attending pain clinics represent a small population of patients who are suffering from unrelenting pain (Turk et al. 2001).

Mayo Clinic (2007) reports those who have been diagnosed with chronic pain have available to them conventional treatments such as medications, injection therapy (i.e.: steroid injections), nerve stimulation (i.e. TENS), medication pumps, counseling, physical/occupational therapy and participating in an exercise program.

What can a team of healthcare professionals do to educate the chronic pain sufferer to live a higher quality life? Occupational therapists have many tools available to help the chronic pain patient develop the skills and tools to manage

their pain and live as normal a life as possible.

### **Occupational Therapy:**

Occupational therapists are unique; they are taught how to focus on occupational performance and are able to apply the intervention process to facilitate patient engagement in order to support participation in life (Youngstrom, 2002).

Engel (1998) suggests occupational therapists incorporate behavioral interventions as part of their interventions for patients with chronic pain. The following are ways the occupational therapist can foster development of skills and tools for patient use:

1. Relaxation exercises teaching the patient how they can relax the muscles and focus on other things besides the pain. This can be taught using progressive muscle relaxation techniques. Also included in this category would be the use of biofeedback so the patient can visually see if he/she is relaxing.
2. Physical activity involves getting the patient involved in an

exercise program such as aerobic exercises, yoga or Pilates instruction with positive reinforcement from the occupational therapist.

2.3. Discrimination training is where the occupational therapist can teach the chronic pain patient at the appropriate time and place in order to discuss certain issues such as talking about their pain.

2.4. Cognitive restructuring is where the chronic pain patient is taught how stress, emotions and negative thoughts are related to the pain experience. Occupational therapists can educate the patient for distorted thoughts and show him how he can alter or change those thoughts into positive thoughts and experience less of a disability from the pain.

2.5. Distraction is a technique which occupational therapists can use to teach the chronic pain patient how they can distract their thoughts from the pain. Activities can be as simple as having the patient participate in something they once enjoyed or introducing them to a new leisure activity.

2.6. Social support is important.

Occupational therapists have a list of community support agencies or organizations that are available to the chronic pain patient such as support groups that specialize in chronic pain.

Occupational therapists can also provide interventions such as electrical stimulation, massage, moist heat, cryotherapy, and other methods to assist the pain sufferer in feeling better (Engel, 1998).

### **Complementary and Alternative Medicine and Occupational Therapy:**

Complementary and alternative medicine can be used by occupational therapists and occupational therapy assistants to promote engagement in occupation, according to Giese (2005) in a position paper written for the *American Occupational Therapy Association*. In the past CAM therapies were paid for in cash. However, today insurance companies are reimbursing for their use which makes it easier for the patient to be reached. Giese (2005) reports research is limited for any one CAM method and further research is needed to establish safety, efficacy, cost

effectiveness, and clinical application. As with any intervention that is used in the therapeutic process, the *Occupational Therapy Code of Ethics* (AOTA, 2000) states occupational therapists choosing to use CAM for intervention need to demonstrate competency to use the modality they are choosing. They need to seek the training required, develop the knowledge and be able to apply the therapy appropriately to the patient population they are treating.

This Evidence-based Review of Complementary and Alternative Medicine in Occupational Therapy Chronic Pain Intervention includes information on certification requirements and where to find more information, such as website addresses.

### **What is massage therapy?**

Massage therapy is a technique in which the elbows, hands and fingers of a trained therapist are used to manipulate the soft tissue of the body (Tsao, 2007). Massage therapy helps to increase blood circulation, promote tissue flexibility, relax muscles, improve emotional well-being and reduce stress and tension (Chesney & Brorsen, 2000). The release of tissue adhesions such as scar tissue and soft tissue injuries such as whiplash can also be relieved through massage therapy (Mayo Clinic, 2007). There are many types of techniques available which can be applied such as effleurage, which involves gentle stroking along the length of a muscle; petrissage involves pressure applied across the width of a muscle; deep tissue massage focuses on aligning deep layers of muscles and connective tissue; soft tissue massage is a technique which addresses all soft tissue; and friction massage involves deep pressure in circular motions (Mayo Clinic, 2007). Massage therapy is intended to be used as an adjunct to other interventions such as to increase range of motion by decreasing the tissue tightness or to

prepare the patient for exercise (Tsao, 2007).

### **What results either confirm or contradict the effective use of massage therapy?**

Plews-Ogan, Owens, Goodman, Wolfe, & Schorling (2006) compared Massage and Mindfulness-Based Stress Reduction (MBSR) for chronic, musculoskeletal pain. The randomized, controlled study compared the two modalities on thirty patients. Pain was assessed using a numeric rating scale from 0 – 10, with 10 being the worst pain. Physical and mental status was also evaluated using the SF-12. At the end of the eight weeks the massage group reported decreased pain as measured by the numeric scale, but at week twelve there was no significant difference in pain levels between both groups.

Rossi, Di Lorenza, Faroni, Malpezzi, Cesarino & Nappi (2006), interviewed one hundred and ten patients with chronic tension-type headaches to gather information on complementary and alternative medicine use. Structured interviews, administered by physicians, were designed to gather information

regarding the use of complementary and alternative medicine. It was discovered massage was used only eighteen percent of the time to treat the participants in this study. Approximately thirty-eight percent of the participants in the study who reported utilizing massage reported positive effectiveness in decreasing headache pain. Rossi, et al. (2006) also discovered that complementary and alternative medicine therapies were most commonly recommended by a friend or a relative to the study participants and that almost sixty percent of the study subjects had not reported complementary and alternative medicine use to their physicians. This study does not address the reason why patients were not reporting CAM use to their physicians or healthcare providers.

Research has demonstrated massage therapy is correlated to decreased pain (Tsao, 2007). However, some of the research has also reported the decreased pain levels are not long lasting. This could be due to small sample sizes. Study participants also reported decreased stress, anxiety and depression, which are some of the components of chronic pain (Tsao, 2007). Tsao (2007) also states massage

therapy is not meant to be used as a separate intervention technique, but rather as an adjunct to other treatment modalities such as for strengthening exercises, increasing range of motion or flexibility. Massage therapy can be used as a preparation tool for participation in an exercise program to assist in decreasing tissue tightness or as a modality to be used after an exercise program to promote occupational performance. Massage therapy and the benefits need to be researched with larger sample sizes in order to produce higher level evidence. However, all studies, without exception, supported the effectiveness of massage therapy (Tsao, 2007).

### **How does massage therapy strengthen OT outcomes?**

There are goals with patients that are unachievable unless massage therapy is performed, such as to loosen tissue adhesions or to increase the extensibility of a muscle or tendon. The benefits of massage therapy are to increase range of motion, decrease pain, and reduce scar tissue adhesions. Patients who have had surgery can benefit from massage therapy with decreased swelling,



decreasing sensitivity and decreasing pain. Massage therapy can help to improve occupational performance for patients who have restricted mobility due to chronic pain by directly improving their range of motion.

### **Under what conditions should the OT consider massage therapy?**

The benefits from massage therapy are improved blood circulation, decreased pain, improved emotional status, decreased tension and stress (Chesney & Brorsen, 2000). In occupational therapy, the benefits of massage therapy, when used as an adjunct to other interventions, can improve range of motion, decrease muscular tightness and decrease pain.

Massage therapy helps a wide range of patients who are suffering from tissue dysfunction. Fibromyalgia patients benefit from massage by experiencing not only relaxation from the massage but also pain relief. Other chronic pain patients who would benefit from massage therapy are those suffering from neck and low back pain, a soft tissue injury such as whiplash or tissue soreness after surgery. Massage therapy would be beneficial for anyone

who has muscular tightness, pain and limited motion or mobility.

### **Under what conditions should massage therapy not be used?**

The risks are minimal with massage therapy. However, as with all other modalities that may be used during the intervention process, massage therapy has its risks, and some of them can be serious. After a massage, diabetics should check their blood sugars as they may have low blood sugar. Patients who are on chemotherapy treatments have fragile tissue and are at risk of tissue damage after a massage, especially when a lot of pressure is used. Deep pressure can cause internal bleeding, temporary paralysis and fractures. Those with osteoporosis are at risk for bone fractures during a massage. It is important occupational therapists get medical histories (past and present) to prevent injuries to the patient.

### **What qualifications are required for the effective application of massage therapy?**

A massage therapist is a trained professional, therefore education must be sought to develop the skills.

Currently there is no licensing board in Wyoming (OT professionals must check the licensing requirements for states in which they practice). The National Certification Board for Therapeutic Massage and Bodywork provides this information. Their website is <http://www.ncbtmb.org>.

### **What are the obstacles to the use of massage therapy?**

Massage therapy (CPT code 97124) is usually a red flag for insurance companies; therefore occupational therapists should use the manual therapy CPT code, 97140, as long as the massage or tissue manipulation is used as an adjunct to occupational performance such as for muscular tightness.

### **Does the research justify the use of massage therapy as a safe and effective CAM therapy?**

The research reviewed for massage therapy was all level II quality research. Furthermore, every study reviewed reported positive results for the efficacy of massage therapy. Not only were there no negative study results, but there were no negative effects or concerns raised

within the studies about massage therapy. In fact, Walach et al. (2003) demonstrated positive efficacy from massage therapy even though their study was completed under hostile circumstances. Occupational therapists can be confident in their use of massage therapy as a safe and reliable complementary and alternative medicine approach.

### **What is yoga?**

Yoga is a form of exercise using a series of poses (asanas) in combination with the breath (pranayama) to promote flexibility and strength (Budilovsky & Adamson, 2003). Wood (2004) reports yoga is one of the oldest pathways to holistic health and wellness, yet there are few healthcare practitioners who embrace yoga or are even familiar with its many benefits, including those achievable with chronic pain patients.

### **What results either confirm or contradict the effective use of yoga?**

Wood (2004) explored the benefits of participating in a yoga program during an eighteen month single case study with a patient suffering from fibromyalgia, neck and back pain and arthritis. The patient received Iyengar-based yoga 1-2 times per week for sixty minutes each session. Wood (2004) evaluated the patient pre- and post- intervention and each time the patient was seen. Wood (2004) established progress was directly proportional to involvement in yoga.

John, Sharma, Sharma, and Kankane (2007) completed a randomized, controlled study to evaluate

the effectiveness of yoga for migraine headaches. Seventy-two patients exhibiting with migraine headaches without aura were randomly divided into a yoga therapy group and a self-care group for three months (John et al. 2007). The yoga group participated in yoga instruction five days per week for sixty minutes, whereas the self-care group was contacted one time per month for three months for information regarding migraines, medications and triggering factors. They also received handouts for lifestyle modifications such as diet and sleep. Outcome measures included pain intensity using a numeric scale (0-10), headache frequency diary, and the McGill pain questionnaire. John et al. (2007) determined that decreased pain intensity, headache frequency, improved emotional status of headaches and decreased medication use reported by the yoga group indicated a significant difference between them and the self-care group. This study alone was able to demonstrate the benefits of participating in yoga instruction to decrease pain and increase emotional well-being.

More research needs to be done in order to establish evidentiary support for the efficacy of yoga. The study by

Wood (2004) was a single case study which is an evidence level V, this is the lowest form of a study. This does not mean that the results were not reliable. There needs to be improved clinical studies with increased sample sizes with randomization.

### **How does yoga strengthen the practice of OT?**

Yoga can strengthen the practice of occupational therapy because it is another modality that can be used during intervention to promote occupational performance for patients with dysfunctions. Yoga addresses the patient's performance in areas of occupation, skills and patterns. Yoga is an excellent adjunct to the intervention process as yoga will help to promote flexibility and strength and helps to engage patients by facilitating occupational performance. Yoga also promotes a client-centered approach to the therapy process. Wood (2004) reports that yoga addresses problems throughout the body and mind and can contribute to effective management of pain. Yoga can address a patient's deficits thus improving occupational performance.

### **Under what conditions should the OT consider yoga?**

Yoga can be used for most patients after an injury or for those with chronic pain such as neck and low back pain. Yoga helps to decrease stress, anxiety, and other emotional dysfunctions related to pain. It also helps to decrease muscular and joint tightness, lubricates joints and tendons and brings a calming sensation to the participant. Yoga can be empowering to help patients feel motivated to be active on a regular basis which is important for the chronic pain patient because they usually have stopped moving and often feel powerless over the pain.

### **Under what conditions should yoga not be used?**

Although the risks associated with participation in yoga are few, they can be extremely serious. Injuries can result if a patient is pushed beyond his/her flexibility range and/or s/he does not have adequate strength to participate in the poses. This can occur when there is not proper training in the use of yoga. If poses are not done correctly a patient can seriously injury him/herself with the

possibility of a liability lawsuit against therapist.

Certain poses must be approached by the yoga instructor with great care. For example, inversion poses can be very dangerous to clients who have high blood pressure or heart problems. Inversion poses are those which require the patient to have their head below their heart such as a downward facing dog. These poses could raise the patient's blood pressure and/or cause a heart attack.

Arthritis patients would need to be guided slowly and progressed through the various levels of yoga using blankets, blocks or other props to prevent injury. Arthritis patients should not do any poses that require heavy weight bearing on hands during the flare-up stages.

#### **What qualifications are required for the effective application of yoga?**

There are currently no licensure requirements. However, the Yoga Alliance can be contacted for certification classes at <http://www.yogaalliance.org>. Information on yoga instructor training available for healthcare professionals

can be found at

<http://www.livingwellstudio.com>.

The studio contact is Ginger Garner, PT, ATC, RYT. She also contracts with the Professional Health & Fitness Institute to promote and organize certification classes in various modalities such as yoga. The Professional Health and Fitness Institute is an organization that offers a variety of certification classes, including yoga, for the healthcare professional. Their website address is <http://www.prohealthandfitness.com>.

#### **What are the obstacles to the use of yoga?**

When yoga is used as an adjunct intervention modality and is described in the paperwork as such, reimbursement by insurance companies will be justified. The CPT code to use for yoga participation is the therex code 97110. Also, instead of noting the actual poses used during the intervention, it is better to describe what treatment objectives the poses addressed.

**Does the research justify the use of yoga as a safe and effective CAM therapy?**

The clinical evidence for yoga is extremely sparse. However, a level II study showing positive results for the efficacy of yoga by demonstrating significantly decreased pain levels for yoga participants is very convincing (John, et al. 2007). The only other study that could be located was a long-term study design that reported exceptionally positive results on chronic pain from the administration of yoga (Wood, 2004).

The drawback of this study was its level V rating as a single-case study.

However, no research was uncovered showing negative results from yoga.

Thus, the quality of the level II study cited as well as its positive results, the fact that there are no research studies demonstrating negative results from yoga, and the fact that the level V single-case study produced positive results that are corroborated by the experience of many individual occupational therapists in their own practices including the author's, provides adequate support for the safe and effective practice of yoga. There is no evidence to suggest that it

should not be considered as a valid choice for CAM therapy.

### **What is Pilates?**

According to Siler (2000), Pilates is a system of stretches and strengthening exercises which was developed by Joseph H. Pilates over ninety years ago. Pilates tones and strengthens muscles while improving posture and flexibility (Siler, 2000). Physical fitness, decreased stress and fatigue, and engagement of the mind-body connection are some of the philosophies behind Pilates (Siler, 2000).

Although very little research on Pilates has been conducted, what has been done demonstrates Pilates enhances and maintains physical fitness. According to the Mayo Clinic (2007), research shows regular practice of Pilates increases one's core strength. Preliminary research suggests Pilates can help reduce weight when practiced regularly in addition to decreasing low back pain.

### **What results confirm or contradict the effective use of Pilates?**

Research demonstrates that Pilates decreases pain in patients with low back pain (Gladwell, Head, Haggard & Beneke, 2006). Forty-nine patients suffering from non-specific low back

pain were placed randomly in a Pilates group for six weeks. Improvement was demonstrated by the Pilates group at the end reporting improved general health and proprioception, increased flexibility, and decreased pain. The control group did not show any improvement. The data from this study demonstrated that participation in Pilates with core stability/strengthening as a base of exercises can help to decrease non-specific low back pain.

Donzelli, Di Domenica, Cova, Galletti & Giunta, (2006) evaluated the efficacy of a Pilates method called CovaTech Method in twenty-one patients suffering from low back pain. Twenty-two patients participated in back school education (control group). The CovaTech Method is derived from the original Pilates. The participants were evaluated pre-intervention and then at one, three and six months afterwards. The Oswestry Low Back Pain Disability Questionnaire (OLBPDQ) was used to evaluate disability from the pain; and the visual analog scale (VAS) was also used. Donzelli et al. (2006) found that while both the control and experimental groups were satisfied with the results, the Pilates group was very satisfied at the

end of the study. This research found that Pilates could be as effective as back school protocol both in short term as well as long term outcomes.

There is a need for future research with larger samples to validate the efficacy of Pilates for decreased pain.

### **How does Pilates strengthen the practice of OT?**

Pilates can strengthen the field of occupational therapy by offering yet another method to be used for the intervention process that will create a client-centered treatment in order to engage the patient during the rehabilitation process. Pilates promotes body awareness, good posture, and efficient patterns of motion. Pilates can address all areas of the Occupational Therapy Framework: Domain & Process (AOTA, 2002).

### **Under what conditions should the OT consider Pilates?**

Pilates can be used for patients in a variety of disease processes such as after surgery for improving range of motion, strengthening or for the chronic pain patient with neck or low back pain

to develop a strong core strength.

Parkinson's Disease patients can benefit from participation by increasing strength and active range of motion.

### **Under what conditions should Pilates not be used?**

Pilates should be started slowly until the patient begins to develop core strength in order to participate in advanced poses in the future. In order to prevent injuries, they need to be educated for using correct body posture during the exercises.

There were no risks found for participation in Pilates during the search for information. However, occupational therapists want to be careful with patients who have had heart problems, high blood pressure, or are on oxygen. Pilates could cause these patients to overexert themselves if introduced too rapidly for the patients to build up the necessary strength.

### **What qualifications are required for the effective application of Pilates?**

At this time there are no requirements for certification in Pilates, but it is advisable the OT receive training in this area in order to prevent



injuries to the patient. Many certification classes can be found on the Internet and can be chosen in accordance with the specific goals of the practitioner.

The Professional Health and Fitness Institute promotes and organizes certification classes in various modalities such as Pilates geared toward healthcare professions such as occupational therapy. Their website address is <http://www.prohealthandfitness.com>.

#### **What are the obstacles to the use of Pilates?**

Pilates can be reimbursable by insurance with the right CPT code which is 97110 (Therex). When documenting Pilates, the objective part of the SOAP note needs to include a description of the condition being addressed rather than listing the actual exercise employed.

#### **Does the research justify the use of Pilates as a safe and effective CAM therapy?**

Although there have not been large numbers of studies on Pilates, two randomized, controlled level II studies with respectable sample sizes showed the efficacy of Pilates in decreasing pain

(Gladwell, et al., 2006) (Donzelli, et al., 2006). Of particular interest is the fact that Donzelli, et al. (2006) compared their experimental (Pilates) group with a group participating in a proven therapy of back school protocol. The fact that the Pilates experimental group showed better results than the back school group is compelling evidence in that it performed better than a traditional therapy with accepted efficacy. Certainly, this suggests that the evidence-based research is strong enough to recommend Pilates as a viable CAM therapy option.

### **What is biofeedback?**

Biofeedback is a technique used to educate patients how to consciously regulate unconscious bodily functions such as breathing, heart rate, blood pressure, muscle tension, etc. (Barnes, 2004). Biofeedback is an option available to occupational therapists for the treatment of chronic pain. It is a method that is usually used to teach patients relaxation skills.

### **What results confirm or contradict the effective use of biofeedback?**

Rochman & Kennedy-Spaen (2007) report when an injury occurs, muscles around the injury area become restricted and taut. This is the body's protective response to prevent further injury. From this muscle tightness, "muscle guarding" develops to protect the body part injured. Guarding behaviors will often occur with acute pain such as after a surgery in order to protect the surgery site. However, by the time the pain becomes chronic in nature, the guarding behavior has become habitual—the human body is used to operating in this fashion and considers this to be natural posturing. Chronic pain patients must learn how to

reverse this guarding response as this compensatory pattern has a negative effect on other body parts (Rochman et al. 2007). According to Rochman et al. (2007), the patient can learn how to facilitate muscle relaxation through the use of biofeedback. Thirty patients diagnosed with fibromyalgia syndrome (FMS) participated in a randomized study. The participants were attending an outpatient clinic and met the criteria required by the American College of Rheumatology (ACR) (Babu, Mathew, Danda & Prakash, 2007). The visual analog scale (VAS), Fibromyalgia Impact Questionnaire (FIQ), six minute walk test (SMWT) and the number of tender points were evaluated prior to and after six days of consecutive treatments, with the experimental group receiving true biofeedback and the control group receiving placebo biofeedback. Both groups participated for six consecutive days of continuous biofeedback treatments with each session lasting forty-five minutes. Although Babu et al. (2007) reported results that showed a significant decline in pain and tender points, the study did not show changes in FIQ and SMWT scores. The VAS scores differed between the two groups.

Babu et al. (2007) conclude when biofeedback is used as a treatment modality it decreases the pain suffered by fibromyalgia syndrome patients as measured with the FIQ, SMWT and the number of tender points reported.

### **How does biofeedback strengthen the practice of OT?**

Biofeedback is an option available to occupational therapists during the intervention process for the chronic pain patient. There are a variety of ways for occupational therapists to use biofeedback. However, it is most widely used by occupational therapists in conjunction with education for progressive relaxation exercises (Engel, 1998). According to Chesney and Brorsen (2000), biofeedback and relaxation training positively influence perceptions of decreased pain in the long term. This can be achieved by an occupational therapist who has received the proper training and credentialing.

### **Under what conditions should the OT consider biofeedback?**

Biofeedback can be used for any number of patients, but is especially useful for those suffering from chronic

pain to teach them how to consciously relax tense muscles. Biofeedback is most commonly used for headaches, low back pain, neck pain, shoulder pain and temporomandibular joint pain (Engel, 1998).

### **Under what conditions should biofeedback not be used?**

Biofeedback is a safe choice and there are no risks associated with its use.

### **What qualifications are required for the effective application of biofeedback?**

Biofeedback classes are offered to help therapists learn how to apply this modality. It is the responsibility of the healthcare practitioner to learn enough about biofeedback, develop the skill in applying it and get adequate training in order to practice biofeedback competently. There are several national organizations, with one in Wheat Ridge, CO. Their website address is <http://www.bcia.org>.

### **What are the obstacles to the effective use of biofeedback?**

Some insurance companies are reimbursing for biofeedback. However,

the reimbursement is about \$7.00 per treatment session and uses the CPT code 90901 for biofeedback.

**Does the research justify the use of biofeedback as a safe and effective CAM therapy?**

The research reviewed for biofeedback established it as a therapy that is being used (Barnes, et al. 2004) as a CAM as well as a therapy whose use was correlated with decreased pain (Babu, et al. 2007). This is hardly an overwhelming amount of evidence upon which to base a decision about whether it is a safe and effective CAM therapy choice. However, this author would like to point out that, interestingly enough, biofeedback is a CAM therapy that does not directly act upon the patient. It is, rather, a tool connected to the patient that gives a visual representation to the patient as to the state of his/her muscle relaxation. As such, it is an absolute adjunct for reinforcement of a behavior such as relaxation. Unlike yoga, massage therapy, Pilates, etc. it does nothing to directly complement the primary therapy. It simply measures the patient's level of response to the primary therapy in a way that provides feedback

to the patient about his/her state of response. That being the case, and given that the studies reviewed provide evidence that biofeedback is a positive adjunct to the occupational therapy process for chronic pain patients, there is no reason not to use biofeedback as a method to monitor and communicate to the patient and therapist the level of response to the primary therapy if that is, indeed, something that the patient and therapist believe will help the patient

### **What is Feldenkrais?**

Moshe Feldenkrais, a physicist, developed the Feldenkrais method while suffering from knee pain. He observed during his own experience with knee pain how humans adapt and also that they have choices about the ways they move. Feldenkrais discovered through his own injury that a person can learn how to modify habits of movement. In addition to that, he discovered that alterations can be made in habitual strategies. Feldenkrais also noticed that his knee pain was causing secondary changes in loading and in movement patterns. He developed the Feldenkrais method by exploring techniques for how a person with a disability can learn how to adapt and change in order to promote the most effective way to live life with a disability (Wyatt-Jackson, 1997).

Dane, 2007 states the Feldenkrais Method is a type of somatic training which centers on the nervous system and dictates how individuals move their bodies. Feldenkrais techniques are described as an owner's manual for the body, according to the North American Feldenkrais Guild. In other words, those who take Feldenkrais lessons can learn how to use their bodies with increased

efficiency (Dane, 2007). By being able to utilize increased efficiency, the individual can be free of chronic pain, expand his/her active range of motion, and improve physical performance as needed for functional tasks such as activities of daily living (Dane, 2007).

### **What results confirm or contradict the effective use of Feldenkrais?**

Stephens, DuShuttle, Hatcher, Sumunes and Slaninka (2001) studied twelve people with multiple sclerosis (MS) who were randomly assigned to an experimental group, Awareness Through Movement (ATM), for eight weeks for a duration of two to four hours each week. The control group participated in educational classes over ten weeks. Stephens et al. (2001) designed the study to learn if improvements can be made using the Feldenkrais Method for balance, balance confidence and self-efficacy. The six outcome measures Stephens et al. (2001) used in this study included the Basic Balance Master modified Clinical Test of Sensory Interaction in Balance (mCTSIB), Limits of Stability tests, the Activities-specific Balance Confidence Scale, the Equiscale, and the Multiple Sclerosis

Self-Efficacy Scale. Results showed the experimental group to have significant improvement in mCTSIB scores, as well as improved balance confidence compared to the control group. The experimental group showed improvements over the control group in other measures. Stephens et al. (2001) suggest this type of motor-learning intervention (ATM) can be an effective tool for improving a variety of physical and psychological limitations as related to balance and postural control.

Bearman and Shafarman (2004) did a pilot study looking at the efficacy and cost of using Feldenkrais intervention for Medicaid recipients with chronic pain. Bearman et al. (2004) enrolled patients into the program who had chronic headaches and/or musculoskeletal problems. Seven patients participated in 2 weeks of intensive instruction, 4-5 hours each day for 4 days each week according to Bearman et al. (2004). The second phase of this study consisted of six more weeks with one meeting per week starting at 4 hours with the duration of the meetings decreasing to one hour the last week. Bearman et al. (2004) were able to show increased patient mobility,

decreased pain perception, and decreased total health care costs, including pharmacological, at the end of the study. The American Academy of Pain Management's National Pain Data Bank (NPDB) test instrument was administered pre- and post-intervention and at one year after completion.

### **How does Feldenkrais strengthen the practice of OT?**

Feldenkrais is about movement awareness. Often when a patient is experiencing chronic pain, s/he develops a dysfunctional mobility pattern. This mobility dysfunction can be with any part of the body, (neck, back, shoulders, arms, hips, and legs). S/he will usually hold him/herself in "guarded postures" so as not to move the part that hurts, thus preventing the injury from progressing. Occupational therapists can help to train the chronic pain patient how to move with efficiency, which results in his/her experiencing less pain. Occupational performance, in turn, can improve by teaching the patient how to move his/her body with increased efficiency.

**Under what conditions should the OT consider Feldenkrais?**

Feldenkrais can be used with any patient, especially those with mobility restrictions. Chronic pain patients are a very appropriate group for Feldenkrais therapy. Any patient who does not have a sense of his/her body or cannot tell the therapist what is going on in terms of his/her physical movements can benefit from Feldenkrais instruction.

**Under what conditions should Feldenkrais not be used?**

There were no risks found associated with Feldenkrais. It is a movement awareness method and patients move at their own pace.

**What qualifications are required for the effective application of Feldenkrais?**

In order to practice Feldenkrais with patients, it is required to go through training to get certified. Feldenkrais is a copyrighted name and cannot be used in documentation unless certification has occurred. The Feldenkrais Guild can be contacted at <http://www.feldenkrais.com> for information and class schedules.

**What are the obstacles to the use of Feldenkrais?**

Insurance will reimburse for the use of Feldenkrais as long as it is used as an adjunct intervention. It is billed under the CPT code for Therex (97110).

**Does the research justify the use of Feldenkrais as a safe and effective CAM therapy?**

Feldenkrais is a proprietary method that has limitations in its application for practitioners secondary to the certification requirements. Nevertheless, there were two studies, level II (Stephens, et al. 2001) and III (Bearman, et al. 2004) that showed positive efficacy from participation in Feldenkrais methods. The fact that certification is required for the practice of this therapy is a reassurance that it has a basis for being a very safe method, since it may only be practiced by those who have the proper training. The fact that the research that has been done indicates efficacy, that the method requires certification, and that there have been no studies showing negative results from its practice all point to its viability as a CAM therapy. However, there are a couple of other reasons that point to a possibly

stronger case for choosing to use Feldenkrais. It is the only CAM therapy studied in this scholarly work that specifies a target population of patients with extremely severe chronic pain accompanied with extreme limitations in movement. The fact that this method has obtained positive results with patients experiencing such severe pain as well as the sophistication of the method, how it is taught, and how it is applied to the individual could make it an exceptionally effective choice for therapists treating certain chronic pain populations.



### **What is cognitive-behavioral therapy (CBT)?**

Cognitive-behavioral therapy is a representation of the work of many cognitive-behavioral theorists; however the most prominent are Albert Ellis, Aaron Beck and Albert Bandura (Bruce & Borg, 1993). With the union of Ellis's rational emotive therapy (RET), Beck's cognitive therapy and Bandura's Social Learning Theory, the role of cognitive processes in understanding behavior, developing self-control, developing evaluations and treatment strategies has advanced the effectiveness of behavioral intervention treatment approaches (Bruce & Borg, 1993).

Chesney and Brorsen (2000) report cognitive-behavioral therapy (CBT) educates patients how thought patterns contribute to the pain experience, the goal being to extinguish negative thought patterns, especially about the self. CBT gives chronic pain patients the skills and tools necessary to manage pain-related dysfunction such as negative thoughts, feelings, and behaviors. CBT is about learning and using effective coping and behavioral skills to manage pain (Rochman et al. 2007).

### **What results confirm or contradict the effective use of cognitive-behavioral therapy?**

Mind-body therapies are helpful for pain control as well as relaxation and can easily be incorporated into the emergency room, as a protocol at the bedside or during diagnostic procedures (Dillard & Knapp, 2005). Dillard et al. (2005), during their systematic review, located a study by Jacobs (2001) which indicates mind-body intervention can be an effective tool for health conditions that are caused or made worse by stress. Pain is stressful and it is also the number one reason patients seek medical attention in emergency rooms across the nation (Gatchel, 2005). These mind-body therapies are advisable options to be considered for patients seeking emergency medical attention whether it is for pain or an injury (Dillard et al. 2005).

### **How does cognitive-behavioral therapy strengthen the practice of OT?**

CBT can be used by occupational therapists in treatment sessions to alter negative thoughts through a variety of interventions such as cognitive

restructuring, goal setting for behavioral changes, and changing irrational thoughts (Chesney et al. 2000).

It can be used with any population of patients, but works well with the chronic pain patient because of the irrational thought patterns they develop such as negative thinking, stress, and tension.

**Under what conditions should the OT consider cognitive-behavioral therapy?**

CBT can be used with any group where the therapist is teaching the patient how to alter their negative thought processes and change negative behavior. Patients who benefit from this type of approach are patients with chronic pain, eating disorders, and depression, to name a few. Chesney et al. (2000) also state there are many methods from which to choose that can be used in conjunction with CBT such as relaxation techniques, biofeedback, time management and assertiveness training.

**Under what conditions should cognitive-behavioral therapy not be used?**

There are no contraindications for the use of CBT with any patient

population. It can be used with any patient where the therapist is educating the patient on how to alter their negative thought patterns.

**What qualifications are required for the effective application of cognitive-behavioral therapy?**

The therapist should attend formal CBT training, but it is not required. Training will give the therapist the tools necessary to work with patients needing this type of therapy. There are many classes from which to choose across the United States.

**What are the obstacles to the use of cognitive-behavioral therapy?**

CBT administered from an occupational therapy perspective in a pain center has a CPT billing code of 97110. As long as the patient is progressing and that is demonstrated in the documentation, most insurance companies will reimburse for this service.

**Does the research justify the use of cognitive-behavioral therapy as a safe and effective CAM therapy?**

The studies for CBT are level III evidence; however, they demonstrated positive efficacy for chronic pain patients (Nash et al., 2004; McCracken et al., 2005). This author did not review a sufficient number of studies to confidently judge the research base for effective and safe use of cognitive-behavioral methods. This needs to be a focus of continuing study in the future.

**Summary**

*The Evidence-based Review of Complementary and Alternative Medicine in Occupational Therapy Pain Intervention* comprehensively presents information on six CAM therapies that can be applied to occupational therapy pain intervention. The number of research studies that have been conducted on each CAM is limited. Results have indicated positive efficacy for the use of CAM therapies in the treatment of chronic pain. Although the results of research reviewed for this study was encouraging, additional high level research is needed to support the CAM applications. Occupational

therapists using CAM applications should consider devising studies to measure outcomes of occupational therapy applications.

## Massage Therapy

Author/Date	Study Objectives	Level/Design/Participants	Intervention & Outcome Measures	Results	Study Limitations
Pesco, Chosa, & Tajima, 2006	To compare the effectiveness of massage with active exercises and education with active exercises for neck and shoulder pain and stiffness.	II – Randomized, controlled. 24 randomized participants are randomly placed either in a massage group or education group with both groups participating in active exercises.	The experimental group received massage sessions one time per week and exercises, the control group received education and exercise instruction. Pre-intervention medical examinations and x-rays were completed to rule out neurologic conditions. The evaluation also included history and a self-report of pain. The data was compiled using the Wilcoxon signed rank test, which is a non-parametric test.	The study showed significant differences in neck and shoulder pain and stiffness between both groups.	The study size was small, more study is needed to bring the efficacy of massage to a level I study.
Plews-Ogan, Ownes, Goodman, Wolfe & Schorling, 2005	To evaluate mindfulness-based stress reduction (MBSR) & massage for chronic pain management.	II– Systematic review. 30 patients with musculoskeletal pain participated in a randomized controlled study comparing the results of mindfulness-based stress reduction and massage.	One hour massages were provided to the experimental group and MBSR was provided to the control group. Pain was assessed using numeric rating scales. Physical and mental health was measured with the SF-12.	At week eight, the massage group experienced decreased pain levels and increased mental health status. The MBSR group did not have significant differences in their pain levels or mental health status at the end of the study. Massage was found to decrease pain, improve mood while MBSR was found to improve mood only. After one month follow-up, there were no differences between both groups for pain reduction.	This study established immediate relief from massage therapy for pain relief; however the effects were not a source of long-lasting pain relief.

Rossi, Di Lorenzo, Froni, Malpezzi, Cesarino & Nappi, 2006	To evaluate the rates, patterns, and presence of predictors of complementary and alternative medicine use with chronic tension-type headache.	III – Cohort study. 110 patients between the ages of 18 & 65 who suffer from chronic tension-type headache participated in a physician-administered structured interview designed to gather information for complementary and alternative medicine use.	Patients attending a headache clinic provided information such as sociodemographic status and history of headache characteristics. Psychiatric disorders were also assessed using DSM-IV Axis I Disorders (SCID-I). Structured interviews administered by physicians were completed using face-to-face interviews.	Forty percent of the participants reported using one or more complementary and alternative medicine treatment with chiropractor care being most prevalent.	The limitation of the study was that only the use of CAM was determined, additional study should be done to explore other issues such as effect.
Walach, Guthlin, & Konig, 2003	To study the efficacy of massage therapy for chronic pain.	II – Pragmatic, randomized, controlled Twenty-nine chronic pain participants received either massage therapy of standard medical care.	Nineteen subjects received massage and ten received standard medical care. Medical care mostly involved pharmacologic therapy, however education for posture was included. All measures were self-reports using questionnaires, additionally medications were measured and pain intensity was measured using a validated German questionnaire, the Hamburg Pain Adjective List (HSAL). Well being was also measured using the Profile of Mood State (POMS). Depression was measured using the Center for Epidemiological Studies (CES-D) scale (ADS).	The massage group reports decreased pain at the three month follow-up, neither group reported significant differences in pain at pre- and post-intervention.	This study was of a small study size due to the study being done in a hostile situation. A larger sample size would bring this study up to a level I.

## Yoga

Author/year	Study Objectives	Level/Design/Participants	Intervention and Outcome Measures	Results	Study Limitations
Wood, 2004	To investigate the efficacy of Iyengar-based yoga for a chronic pain subject.	V – single-subject case study. One female diagnosed with chronic pain (Fibromyalgia, neck and low back pain).	18 months of Iyengar-based yoga, 1-2 times per week for 60 minutes each. No other exercise was done during the study.	The author was able to demonstrate progress was directly proportional to participating in Iyengar-based yoga instruction.	This was a single case study, more research is needed to bring the level higher in order to have reliable research on yoga.
John, Sharma, Sharma, & Kankane, 2007	To examine the effectiveness of yoga for migraine management.	II – randomized, controlled Seventy-two persons with migraine migraines without aura were randomly divided into a yoga group and a self-care group.	The experimental group participated in yoga therapy for three months and the self care group was contacted by phone once per month (three months) for education on migraines, medication use & modifications to reduce migraines. The control group also received handouts with lifestyle modifications such as diet and sleep. Outcome measures used for this trial included a measurement of frequency and intensity of migraine attacks, the McGill Pain Questionnaire (MPQ), Hospital Anxiety Depression Scale (HADS), and a statistical analysis for baseline information and then at three months.	The yoga group had significantly lower outcome measures at the end of the three month period. They reported decreased migraines as well as decreased intensity. The yoga group also reported decreased use of medications post-intervention.	This study provides preliminary evidence of yoga participation and the effects on migraines, however additional studies are needed to determine the long term efficacy and verify the results of yoga for pain.

## Pilates

Author/Year	Study Objectives	Level/Design/Participants	Intervention and Outcome Measures	Results	Study Limitations
Gladwell, Head, Haggar & Beneke, 2006	To examine the effect of a Pilates program (modified) for individuals suffering from chronic non-specific low back pain.	II - A single blind randomized controlled trial. 49 individuals with chronic low back pain were randomly selected to a control group (n=24) and to a Pilates Group (n=25).	The Pilates group participated in six weeks of Pilates instruction with both groups continuing with normal activity. Functional and questionnaire-based assessments were completed by an evaluator blinded to the group. The assessments were pre- and post-intervention.	Improvements were seen in the Pilates group with increased general health, sports function, flexibility, proprioception, and a decrease in pain.	
Donzelli, Di Domenica, Cova, Galetti & Giunta, 2006	The efficacy of CovaTech Pilates method was evaluated for patients with low back pain.	II – Randomized controlled trial. 53 patients with a minimum of 3 months of low back pain without radicular symptoms. 43 patients completed the study.	21 patients participated in ten consecutive sessions of CovaTech Pilates and 22 patients (control group) participated in the basic protocol for back school. Evaluations were completed at the start of the study and then at 1, 3, and 6 months after the first treatment. The Oswestry Low Back Pain Disability Scale (OLBPDQ) and visual analog scale (VAS) were used to assess disability and pain.	A significant reduction in pain intensity and disability was observed across both groups, although, the Pilates group showed better compliance and subjective response to intervention. The results from the Pilates group was comparable to the back school group, suggesting Pilates as an alternative method for chronic low back pain.	

## Biofeedback

Author/Year	Study Objectives	Level/Design/Participants	Intervention and Outcome Measures	Results	Study Limitations
Barnes, Powell-Griner, McFann, Nahin, 2004	To estimate the use of complementary and alternative use among adults in the United States	IV – Data was collected from the 2002 National Health Interview Survey (NHIS). 31,044 adults over the age of 18	Data collected using computer-assisted personal interviews (CAPI).	The authors found 62% of adults use a form of complementary and alternative medicine. During the 12 month study 43% showed prayer was used for ones' own health or for another's health, 18.9% used natural products, 11.6% used deep breathing, 7.6% meditated, 7.5% used chiropractic services, 5.1% participated in yoga, and 5.0% received massage.	The complementary and alternative medicine questions on the CAPI were dependent upon the respondents' knowledge of CAM and their willingness to report accurately.
Babu, Mathew, Danda, & Prakash, 2007	To evaluate the benefits of electromyography (EMG) biofeedback to reduce pain in Fibromyalgia patients.	II – Randomized controlled trial. 30 patients who were attending an outpatient clinic and also met the American College of Rheumatology (ACR) criteria.	33 patients were randomly divided into two groups, the control group receiving biofeedback and the experimental group receiving placebo treatments. The assessment tools used in this study included the visual analog scale (VAS), fibromyalgia impact questionnaire (FIQ), six-minute walk (SMWT) and number of tender points with the degree of tenderness.	Significant pain decreases were evident in the patients' receiving Biofeedback. The ANOVA analysis also showed significant changes FIQ, VAS, SMWT scores.	



## Feldenkrais

Author/Year	Study Objectives	Level/Design/Participants	Intervention and Outcome Measures	Results	Study Limitations
Bearman & Shafarman, 2004	Efficacy and cost using Feldenkrais for Medicaid recipients with chronic pain.	III – uncontrolled and unblended pilot study. Seven patients with chronic headaches and/or musculoskeletal problems participated in the study.	The initial phase included 2-weeks of intensive instruction, 4-5 hours each day for 4 days each week. The second phase consisted of six more weeks with one meeting per week starting with 4 hours for the first meeting and decreasing to one hour at the last week. Patient mobility, pain perception, and total health care costs including pharmacological were evaluated. The American Academy of Pain Management's National Pain data Bank (NPDB) test instrument was administered before participation, after the program and at one year after completion.	Results were favorable towards decreasing Medicaid costs, increasing mobility and decreasing pain perceptions.	The positive results and relative low level of evidence suggest more studies should be undertaken.
Stephens, DuShuttle, Hatcher, Shmunes & Slaninka, 2001	Examination of the effectiveness of Awareness Through Movement (ATM), on balance, balance confidence, and self efficacy.	II– Randomized, controlled trial. Twelve participants with a diagnosis of Multiple Sclerosis (MS) were selected from a local MS support group.	The experimental group participated in eight classes of 2 – 4 hours in length (20 hours). The classes were conducted over 10 weeks. The control group received four- 90 minute education classes including education for MS and acupuncture, new medications for MS, benefits of exercise, and social support issues. The instruments used for pre and post data included Equiscale, Fall records, computerized balance assessment, Activities-Specific Balance Confidence scale (ABC), and Multiple Sclerosis Self Efficacy Scale (MSSE).	The Awareness Through Movement group showed significant improved scores on the testing instruments indicating their center of balance was more towards the theoretical balance. They also demonstrated with improved balance confidence.	This study had positive results with a limited amount of research, especially with significant results in the study, suggest that more research should be conducted.

## Cognitive-Behavioral Therapy

Author/Year	Study Objectives	Level/Design/Participants	Intervention and Outcome Measures	Results	Study Limitations
Nash, park, Walker, Gordon, & Nicholson, 2004	Investigative study to see whether cognitive-behavioral therapy (CBT) provided benefits and whether using a group format would intensify the treatment without increasing costs.	III – Pilot study. 62 participants suffering from headaches with moderate to severe headache-related disability.	Participants completed pre- and post-treatment evaluations and participated in a 10-week CBT treatment group. The impact of intervention for headaches (frequency, intensity, and duration), medication use, and quality of life were assessed.	Separate multivariate investigations of differences showed improvements in headache, decreased medication use, and increased quality of life. The study also demonstrated a 50% decrease in headache frequency in 50% of the participants.	The limitations of this study are that there is no control group to compare with the experimental group.
McCracken, Vowles & Eccleston, 2005	To examine the effects of an acceptance-based treatment program within an interdisciplinary program.	III – case controlled study. 108 patients with complex, chronic pain symptoms.	Patients participated in either a 3-week or 4-week residential program or a 3-week hospital based program. A group format was chosen for intervention, consisting of 5 days per week for six hours. Demographics, pain intensity, number of pain related visits to a general physician were collected pre-intervention. The Beck Depression Scale (BDI), Pain Anxiety Symptoms Scale (PASS), and the Sickness Impact Profile (SIP) were also completed.	Significant improvements were reported with social, physical and emotional performance. Most of the improvements continued 3-months after the intervention. The study was able to correlate increased acceptance with pain symptom improvements.	Further longitudinal studies would show whether these results are sustainable.

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## CHAPTER V

### SUMMARY

The purpose of this scholarly project was to develop an *Evidence-based Review of Complementary and Alternative Medicine for Occupational Therapy Chronic Pain Intervention* for occupational therapists who wish to incorporate complementary and alternative medicine (CAM) into their practices. Complementary and alternative medicine is a broad term used for an expansive range of methods that lie outside the realm of the medical model (traditional or conventional medicine) including occupational therapy. A literature review showed that yoga, massage therapy, Pilates, biofeedback, Feldenkrais, and cognitive-behavioral therapy improve occupational performance for a wide variety of diagnoses related to chronic pain. Massage therapy, yoga and cognitive-behavioral therapy produced a good number of studies while biofeedback, Pilates and Feldenkrais had a diminutive amount of literature to validate the efficacy for using these methods during the occupational therapy pain intervention process. The CAM methods described in this scholarly project fit into the occupational therapy framework and can be used as modalities for treatments to prepare the patient for improved occupational performance. The evidence-based review reflects current research in relation to each of the six complementary and alternative medicine techniques and enables the practicing therapist to make informed decisions regarding the implementation of each method into his/her daily practice.



Although there is extensive research for the use of complementary and alternative medicine, there still needs to be more research to establish their efficacy. Future research needs to include larger sample sizes to validate the effectiveness and safety of CAM for health and wellness. There also needs to be further research into the efficacy of complementary and alternative medicine for occupational performance, specifically applying to those suffering from chronic pain. This scholarly project recognizes the lack of literature regarding the efficacy of biofeedback, Feldenkrais and Pilates for chronic pain interventions to be a limitation.

It is anticipated this scholarly project will be used by occupational therapists who wish to incorporate complementary and alternative medicine into their practices. The *Evidence-based Review of Complementary and Alternative Medicine for Occupational Therapy Chronic Pain Intervention* provides the occupational therapist with a review of research evidence related to the comprehensive treatment of the most current research on the six CAM therapies that are the focus of this scholarly project. A summary of the literature is found in the literature review tables in a user-friendly format. Information for practice and training are provided in the evidence-based review for occupational therapists and will help them learn what is needed to increase competency and knowledge regarding the use of CAM. Evidence tables are included to provide a user-friendly review of research studies, level of evidence present and summary of results.

This product was also developed in the hopes that complementary and alternative medicine will become a common addition to the intervention process for occupational therapy. To that end, stronger and continued research methods need to be developed. The evidence for any one particular complementary and alternative medicine method is

limited in number of studies. However, there are some strong studies, especially level II quality studies showing positive results for the use of these CAM therapies to treat chronic pain, evidence is limited. Nevertheless, future clinical trials using larger sample sizes and utilizing a randomized controlled approach will further strengthen the evidence.

The potential for growth in the field of complementary and alternative medicine for occupational therapy is strong due to a wide range of CAM methods available and the public's desire for interventions directed toward wellness and health promotion.

Occupational therapy utilizes techniques that incorporate activities that are meaningful to patients (Brachtesende, 2005). Therefore, it is unique compared to treatments in other healthcare fields because of its ability to utilize techniques that are relevant to the lives of patients. Occupational therapists who are properly trained and/or credentialed in the use of CAM techniques have the potential to incorporate complementary and alternative medicine into the intervention process. Throughout the upcoming years, complementary and alternative medicine will continue to grow; occupational therapy needs to stay up with the changing times and must take measures to be prepared to offer updated techniques and methods to the intervention process. Interventions using complementary and alternative medicine can facilitate a holistic approach to support the patient's ability to engage in meaningful occupations (Brachtesende, 2005).

However, all complementary and alternative medicine must be used appropriately and within the scope of occupational therapy keeping in mind that they must be used as preparatory and adjunct intervention modalities not as standalone treatment approaches. Occupational therapists wishing to incorporate complementary and alternative medicine into their practices need to receive the proper training and credentialing in order to learn

how to use the various CAM techniques safely with their patient clientele.

Complementary and alternative medicine use is the wave of the future. With more and more people wanting wellness and good health, and being disposed to pursuing CAM therapies without informing their physicians, occupational therapists are in a prime position to help translate the use of CAM therapy into lasting and meaningful occupational results.

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